



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT(s): Xerox Corporation on behalf of Patrick Perdu,
inventor

SERIAL NO.: 10/633,351 ART UNIT:

FILING DATE: August 1, 2003 EXAMINER:

TITLE: Offline Markless Post Processing of Printed
Media

ATTORNEY
DOCKET NO.: 690-011194-US (PAR) / D/A 1605

Commissioner of Patents
P.O. Box 1450
Alexandria VA 22313-1450

STATEMENT OF FACTS UNDER 37 C.F.R. 1.47(b)

SOLE INVENTOR CANNOT BE FOUND

This statement is being filed concurrently with a petition under 37 C.F.R. §1.47(b). This statement is made as to the exact facts that are relied upon to establish the diligent effort made to secure the execution of the declaration by the nonsigning inventor for the above-identified patent application.

Valerie Whitelaw, an authorized representative of the applicant, Xerox Corporation, having personal knowledge of the facts set forth herein says that:

1. On 22 August 2003 I sent a copy of a Declaration, Assignment, the application as filed, a stamped, self addressed envelope, and a first cover letter requesting review and execution of the documents and a reply within 14 days, to Mr. Patrick Perdu at Heart Transverter S.A, Apdo 370, Punterenas, Costa Rica, Hadleigh. These documents were sent as special delivery.

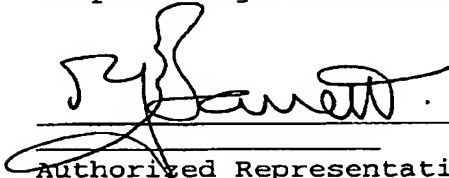
2. On 26 September 2003, I sent another copy of the Declaration, Assignment, the application as filed, a stamped, self addressed envelope, and a second cover letter requesting review and execution of the documents and a reply within 14 days, to Mr. Patrick PerduHeart Transverter S.A, Apdo 370, Punterenas, Costa Rica.

3. As of 11 February 2004 I have received no reply to any of the aforementioned mailings.

4. The invention was made by Patrick Perdu while in the employ of the Applicant, Xerox Corporation.

5.

Respectfully submitted,



Date

Authorized Representative for the Applicant

Xerox Corporation
800 Long Ridge Road
Stamford
Connecticut
US



THE DOCUMENT COMPANY
XEROX®

Xerox Limited
Patent Department
Technical Centre
Bessemer Road
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Hertfordshire
AL7 1HE

Tel: +44 1707 353 250
Fax: +44 1707 353 223

22 August 2003

Patrick Perdu
C/o Heart Transverter SA
Apdo 370
Puntarenas
Costa Rica

Our ref: D/A1605

Dear Patrick

In regards to the above-mentioned case, please find enclosed a copy of the Patent Application.
Please sign the legal forms where indicated and return the documents to me as soon as possible.

Please inform me of any costs that are incurred by yourself so that I can arrange for you to be reimbursed.

Many thanks for your co-operation.

Yours faithfully

Valerie Whitelaw
Patent Department

Enc. Patent Application
Declaration/Power of Attorney (1)
Assignment (1)

Xerox Limited
Bridge House
Oxford Road
Uxbridge
Middlesex
UB8 1HS

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Tel: +44 1707 353 250
Fax: +44 1707 353 223

26 September 2003

Patrick Perdu
C/o Heart Transverter SA
Apdo 370
Puntarenas
Costa Rica

Our ref: D/A1605

Dear Patrick

In regards to the above-mentioned case, please find enclosed a copy of the Patent Application.
Please sign the legal forms where indicated and return the documents to me as soon as possible.

Please inform me of any costs that are incurred by yourself so that I can arrange for you to be reimbursed.

Many thanks for your co-operation.

Yours faithfully

Valerie Whitelaw
Patent Department

Enc. Patent Application
Declaration/Power of Attorney (1)
Assignment (1)

Xerox Limited
Bridge House
Oxford Road
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Middlesex
UB8 1HS

REGISTERED OFFICE BRIDGE HOUSE UXBRIDGE

XEROX Invention Proposal Form

Please TYPE and return your original, accompanied by (1) Manager's Comments form and (2) Invention Statement form(s) to your Site Invention Proposal Coordinator



(For Patent Dept. use only)

IP No: **IPA10862**

MPO Atty: **RPS**

XPC:

Proposal submitted by:		(If space for additional submitters is required, please use an additional sheet)	
1	Name: Patrick Perdu	Tel. No: +32(0)2 720 99 06	
	Internal Address: EES Xerox CFET PSG	Email Address: patrick.perdu@ees-xerox.com	
2	Name:	Internal Tel. No:	
	Internal Address:	Email Address:	
3	Name: RECEIVED	Internal Tel. No:	
	Internal Address:	Email Address:	
4	Name: JUL 17 2001	Internal Tel. No:	
	Internal Address:	Email Address:	
5	Name: JOANNE H. PARKER	Internal Tel. No:	
	Internal Address:	Email Address:	
6	Name:	Internal Tel. No:	
	Internal Address:	Email Address:	
Manager: Michel Lemoine		Internal Address: EES Xerox R&D	Tel. No: +32(0)27209906
Title of invention: Offline mark-less post-processing of printed paper rolls			
Name of Program, Product or Technology: Continuous Feed high end printers			
Name of others known to have done similar work: IBM LMO; UP3I; Xerox MFFA			
List any similar or related Invention Proposals, patents, publications or products: Print line segmentation			
Indicate the date of any previous or planned future disclosure of the invention external to Xerox and describe the nature of the disclosure: No planned disclosure			
Any outside funding and/or contractual relationships connected with the work described herein: No			
Are any of the inventors non-Xerox employees? No			
Extent of implementation:			
a) Paper proposal		Yes	c) Prototype
b) Feasibility model/calculation		No	d) Production design
Invention summary			
Allows for offline post processing while keeping the mark-less job separations or post processor commands. This is done automatically without requiring the operator to save a recorded file and load it again in the system.			
The post-processing control codes are recorded at print-time in a RFID chip attached to the printed paper-roll core. When post-processing the paper, the RFID chip is read backwards to provide for mark-less processing in the rest of the process line.			

Submitter(s) Signature(s)

Patrick Perdu

Date: 14 June 2001

Witnessed & understood by:

M. LEMOINE

Date:

PRINT NAME:

I/We have also completed an Invention Statement Form

Version Feb 1998

XEROX Invention Proposal Form

Please TYPE and return your original, accompanied by (1) Manager's Comments form and (2) Inventorship Statement form(s) to your Site Invention Proposal Coordinator



(For Patent Dept. Use only)

IP No: **IPA10862**

MPO Atty:

XPC:

Description of the invention - (This should include: 1) an explanation of the problem solved by the invention; 2) description of how the invention works - with drawings, where possible; and 3) a discussion of how the invention improves over present technology. It would also be helpful if you could say whether there are alternatives available. If so, what are the relative advantages of the present proposal?)

Context

In high-end continuous feed printing, printers are usually attached to post processors that process the paper. We refer to online post processing.

Usually, the actual process speed of the post processors is limited by the speed of the printer as the post-processors regulate their speed on the inbound paper.

Also, some slow post processors may not be compatible with very fast printers because they are not capable of absorbing the paper fast enough.

For high volume production sites, it may be cost efficient to decouple actual printing from post processing such as cutting, stacking, folding, inserting into envelopes, weighing and stamping. *Note: any other post processing chain makes sense.* This is usually done by rewinding the paper after it has been printed and then unwinding it into a post processing line. In this case, called offline post processing.

It allows for tuning the number of actual printing lines and post processing line.

Specific post-processing actions usually require commands by the printer.

These commands are either written as small marks on the paper, that are read by the post processor as the paper goes through; or they are passed as signals or commands synchronously with the paper advance clock by the printer to the post-processors. The post-processor stores these commands or signals events together with the paper position when it was issued, and counts paper advance until it reaches the position where the action is to be taken.

These actions may include the following information:

- The page has been printed and must be processed; or the page has been ejected and should be discarded
- The page is part of a set and a given post processor action is to be performed when the set is complete. E.g. "This is a mail with three pages for John Doe, while next set is a two-pages set for Bill Smith; each is to be stapled, folded and inserted into different envelopes".
- The page was subject to a jam and the post-processor should stop when reaching it, and call for an operator attention.
- The page length changes hereafter and the post-processor should (for instance) adjust its cutting distance.
- The pages are dedicated to post-processor alignment and adjustment. They require: stop; call for operator attention and action, and they should be discarded afterwards.
- In case the post-processor is a folding machine used to fold booklets that are trimmed and sewn, commands may include the description of the folding pattern (the imposition pattern) and the direction of the page.

Offline processing is currently only possible if the post processors commands are actually written on the paper.

The trend of the market is to avoid customer printout "pollution" by marks on the paper. For this reason, several post-processing architectures come up with the so-called "mark-less" capability.

The invention takes place in the context of the segmentation already described in a separate IP.

The invention

The idea is to record the pages description and post-processing commands as the paper is physically rewound on the end-of-line rewinder.

This information is recorded on a chip attached to the core of the roll. RF or simple "iButton™" contact programmable memory may be used.

When the roll is mounted on an unwinder to feed the offline post-processor chain, the unwinder or an attached device reads the information backwards (as the unwinder reverses the order of the pages) and qualifies the pages for the offline post processor.

Submitter(s) Signature(s)

Date: 14 June 2001

Witnessed & understood by:

M. LEMOINE

Date:

PRINT NAME:

I/We have also completed an Inventorship Statement Form

XEROX PRIVATE DATA

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IP No: **IPA10862**

MPO Atty:

XPC:

One simple implementation based on the PLB

The main problem is to have chip writing post processors and chip reading preprocessors. The PLB provides for an elegant solution.

Short PLB description:

The **Print Line Bus™** is composed of microprocessor controlled PLB boxes attached to each device in the print line. Each box interfaces to its attached device using the device's own signals.

All the boxes are connected to one another for power and communication. The communication is based on an automotive serial protocol known for its real-time and intrinsic security features.

"PLB" refers to the ensemble of the networked boxes each possibly attached to a specific device.

The PLB is responsible for:

- **Interfacing** each device with its own signals and timings, and translating to and from a common PLB language based on real-time messages.
- **Isolating** selected segments from each other and the remaining devices: the **filtering capability** required.
- **Synchronizing** paper masters and other devices (all the real time print line handling aspects)
- **Synchronizing** the paper path with the data path (as described below)

Devices with integrated PLM (Print Line Manager) also connect through a RS232 line to their attached PLB box. Since several PLM-equipped devices can be part of the same segment, there can be several RS232 connections between the PLB and the PLM of that segment. This is the segmentation as described in a separate IP.

In order to handle properly the commands to the post processors, each PLB box attached to a device that either provides pages signals or paper advance clock (or both) handles a software buffer that describes the nature of the pages between the attached device and the upstream one.

The PLB box attached to the first printer ("page qualifying device") receives the description of the pages to be actually printed from the printer controller, as well as the process control codes.

It describes the nature of the physical sheets as they are qualified by the printer (printed, ejected, end of set...) and passes the information downstream from box to box until it reaches the last device.

Offline mark-less post-processing: the last PLB node in the print line receives the description of the actual paper as it reaches it, therefore it can write it in the memory chip, using a RF base or station. If the offline post processing line is also PLB controlled, then a similar installation in the unwinder can feed the information to the downstream devices.

Alternative solutions

Typically, this file describing the pages might be stored on a computer and then selected by an operator when he/she mounts the roll on the unwinder to the post-processing line.

There is a risk that the recalled file does not correspond to the actually loaded roll, since human intervention is required.

Advantages of the solution:

- Allows for mark-less offline post processing.
- Automatic re-qualification of the pages removes (a) the need for a separated file storage and (b) the risk of recalling a wrong file
- Very low cost solution, especially since the PLB also performs devices interfacing, synching and segmentation.

Submitter(s) Signature(s)

Date: 16 July 1998

Witnessed & understood by:

PRINT NAME:

17. LEMOINE

Date:

I/We have also completed an Inventorship Statement Form

XEROX**Manager's Comments Form**

(This form to be TYPED and attached to Invention Proposal Form and Inventorship Statement Form)

XEROX
DocuLockProtect until
Forever

(For Patent Dept. use only)

IP No. **IPA10862****Inventor(s):** Patrick Perdu**Title of the invention:** Offline mark-less post-processing of printed paper rolls**Manager's Checklist – Please ensure:**

- Clear, readily understandable description of the invention
- Identification of novel features
- Completeness/General presentation
 - Correct forms used
 - Inventorship Statement completed
 - All boxes completed on all forms
 - Forms compiled electronically (optional)

TO THE MANAGER:

If you do not consider the subject matter to be suitable for an invention proposal, please seek advice from the Patent Department before signing and forwarding.

- 1. Problem addressed or function provided by the invention:** [Example 1a: Finisher cost reduction. 1b: Annotation of copies]
Offline finishing solution using pre-recorded paper processing orders & command.

- 2. New and distinctive feature(s) of the invention:** [Example 2a: New, simplified stacker configuration. 2b: New technique of using low cost LCD to write annotation messages.]
The function of record (online) / replay (offline) is a new concept in the paper finishing world.

- 3. Could invention have impact beyond current description?** [Example 3a: Could also function for printer finisher. 3b: Could also function to erase edit copy.]
Since paper production post processing activity is wide in term of available operation, this IP embraces a large amount of line implementation.

- 4. Potential for Xerox application. Specify product or technology programme if possible.** [Example 4a: Mainline approach in Programme Q. 4b: Adds significant feature to future products.]
This IP enhances the previous concept of Print-Line-Segmentation (IPA10471) by extending the online capabilities to the offline world of paper processing.

- 5. Value to competitors; potential for license or trade:** [Example 5a: Enables much lower cost finishing than any known system and opens possibilities of moving finishing down-market. 5b: Low cost will be hard to match.]
Open the doors to the complete paper control line solution (Roll to delivery)

- 6. Please indicate any related patents, publications, or activities you know of:**
IPA10471

Manager:

I have read and understood the accompanying Invention Proposal, Inventor ship Statement Form(s) and above checklist, and agree with the information set out herein.

Signature: 

Date: 14 June 2001

XEROX**Inventor ship Statement Form***(This form to be TYPED and attached to Invention Proposal Form and Manager's Comments Form)***XEROX**
DocuLock
Protect and
Preserve*(For Patent Dept. use only)*IP No. **IPA10862****Title of the invention:**

Offline mark-less post processing

Please explain briefly when and how this proposal was actually devised. If it was devised jointly, explain clearly each individual's contribution to the proposal:*(Please attach documentary evidence, e.g. extracts from your laboratory notebook(s), technical reports, draft papers or minutes of relevant meetings, wherever possible)*

The idea occurred on 2000 February 16th, while thinking about the possibilities for the actual synchronization of different paper masters in the context of printing duplex with two engines one after the other. The PLB was a possible solution and I was noting down the advantages of handling the synchronization with the PLM or with a dedicated apparatus. At that time, the PLB proposed the possibility of a real line management, which became segmentation later on.
Among the advantages, the possibility to record online codes for offline processing appeared obvious.

By signing below, each submitter who claims to be an inventor confirms, that to the best of his/her knowledge, there are no other contributors to the devising of this invention proposal beyond those named herein.

If a patent application based on this invention proposal is to be filed, the attorney preparing that application will make the final determination of inventor ship.

SUBMITTERS/INVENTORS AFTER THE SIXTH, PLEASE USE ADDITIONAL SHEET**Signed:** _____**Full Name:** Patrick Perdu
Nationality: French
Home address: 80, avenue Jules de Trooz,
1150 Woluwe St Pierre, Belgium**Date:** 2001 march 29th
Occupation: R&D engineer
Location: EES Xerox, 41b28 Weiveldlaan
1930 Zaventem Belgium**Signed:** _____**Full Name:**
Nationality:
Home address:**Date:**
Occupation:
Location:**Signed:** _____**Full Name:**
Nationality:
Home address:**Date:**
Occupation:
Location:**Signed:** _____**Full Name:**
Nationality:
Home address:**Date:**
Occupation:
Location:**Signed:** _____**Full Name:**
Nationality:
Home address:**Date:**
Occupation:
Location:**Signed:** _____**Full Name:**
Nationality:
Home address:**Date:**
Occupation:
Location:**XEROX PRIVATE DATA****Section 3****Version: Nov 1997**

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IP No. **IPA10862**

MPO Atty.

XPC:

Process d'acquisition de la qualité (en fait de l'output)
3 détails de niveau d'acquisition de la qualité
cela a pour 9 étapes (ex: 1. Champ, 2. Point, 3. Point, 4. Point, 5. Point, 6. Point, 7. Point, 8. Point, 9. Point)
Il y a confusion dans les données au niveau "niveau"
une fois c'est un niveau qui se perd
une fois c'est un niveau qui se perd
l'opérateur "jardin" un niveau "et c'est un problème de langage!"

14. Ferme (au sens) reprise des données au niveau du P.N.

SUBG. Et la on peut avoir l'impression bobine bobine qui qualifie le page et un traitement avec des pages d'alignement (en fait le page qualifiée dans un point) En fait on a des données au niveau de la bobine dans la même machine, mais on la donne les qualifications de page (dans l'ordre inverse) après bien sûr l'avoir alignée.
→ concept intéressant à développer mais peu pratique à mettre en œuvre tel quel

16. Ce sont des données avec des données, mais le document "duplex" (même implication au P.N.) dans sa version d'aujourd'hui. Et c'est une approche (logique) P.B. (en fait) tout est piloté par le P.N. On a une à des données, mais il faut bien reconnaître qu'en fait le P.N. "à par" de données pour la table des données d'entrée et la plus intéressante réponse pour les données d'entrée.
→ la table "d'acquisition" du device par le P.N. "à par" données et on a tellement les données que le P.N. et surtout de la communication.
→ Je pense que le P.N., comme tout bon chef, doit savoir déléguer.

17. Ferme. Nous avons un langage lors du passage, on peut identifier les pages. (Note: pour le langage d'aujourd'hui)

SUBG. ? Et puis de P.B. au contraire, à des pages d'acquisition en général: communication de l'information de qualification et manipulation par le P.N. de cette info acquise aux données au sens job.
Le rôle du P.B. n'est pas de la chaîne d'acquisition, mais le page qualifiée au sens job d'acquisition pour les données à la table de la page pour manipulation ultérieure par logiciel.
→ fait-il un travail possible?
Le P.N. pendant tout un processus et on doit de ce qui se passe attendue dans cette architecture de contrôle de ligne.
→ identifier les concepts d'action / de structure et organisation au sein d'un système de la même manière.
Notion de ligne de traitement; Notion de répétition; identification des "pages" au sens d'éléments (logique, données de traitement).
Notion "temps" et "longueur" du processus de traitement des données à la table de la page.
Optimisation des coûts de la chaîne (pourcentage des coûts).

Submitter(s) Signature(s)

[Signature]

Date: 11 juin 2007

Witnessed & understood by:

PRINT NAME:

Date:

I/We have also completed an Inventorship Statement Form

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IP No: **IPA10862**

XPC:

► Modèle d'imposition des pages, voir Daniel Lebrun

Version Feb 1998